24.4120

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S/181/60/002/06/11/050
B122/B063

AUTHORS: Shaskol'skaya, M. P., Vekilov, Yu. Kh.

TITLE: Effect of Ultraviolet and X-Rays Upon the Internal Friction of Silver Chloride

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 6, pp. 1107 - 1110

TEXT: The article under review describes the effect of ultraviolet and X-rays upon amplitude-independent internal friction at low frequencies (1 cps). The internal friction was determined by measuring the logarithmic decrement of damping of the torsional vibrations of AgCl filaments by means of a relaxator. The behavior of the shear modulus was determined from the square of the vibration frequencies (f^2). The AgCl samples were first deformed (compressed) and another part of the samples was annealed. No satisfactory results, however, could be obtained with the latter (Table). The internal friction was reduced by irradiation, with ultraviolet and X-rays yielding the same action. The following dependence of the intensification

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Effect of Ultraviolet and X-Rays Upon the Internal Friction of Silver Chloride

ΔQ^{-1} (or reduction of internal friction) on the exposure time could be established: $\Delta Q^{-1} = \Delta Q^{-1}_{max} e^{-\beta\tau}$. Samples that had been compressed already before, were strengthened on irradiation according to the same law. The stabilization is explained by fixation of dislocations caused by radiation, the dislocations having been produced by deformation. The internal friction is thus reduced by the fixation of dislocations. β in the above formula denotes the number of nodes fixed per unit of time during exposure. The limit of internal friction was found to be independent of the type and intensity of irradiation and of the number of the resultant vacancies. The authors finally thank Professor B. N. Finkel'shteyn, Doctor of Physical and Mathematical Sciences, for his interest and for his discussions of the results, as well as V. R. Regel' and V. M. Stepanov for their aid in drawing the expansion curves. There are 3 figures, 1 table, and 11 references: 5 Soviet, 1 German, 4 American.

ASSOCIATION: Kafedra fiziki Moskovskogo instituta stali (Chair of Physics of the Moscow Steel Institute)

SUBMITTED: June 29, 1959

Card 2/2

S/181/60/002/009/031/036
B004/B056

AUTHORS: Shaskol'skaya, M. P., Blistanov, A. A.

TITLE: The "Decorating" of Defects in Silver Chloride Crystals

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2270-2275

TEXT: The authors describe a method of "decorating" defects in AgCl crystals by bringing them into contact with zinc. Two kinds of samples were investigated: a) lamellas rolled down from single crystal to a thickness of 0.4 - 0.5 mm, and then freed of stress by heat treatment. b) Single-crystal lamellas 1.0 - 1.2 mm thick. A polished zinc lamella was pressed onto the samples at room temperature, taken off again after 30 - 45 min, after which the AgCl was examined under the microscope. At places where Zn had been in contact with AgCl, white spots were observed, which had formed in consequence of the reaction $2AgCl + Zn \rightarrow 2Ag + ZnCl_2$.

After two days, rainbow-colored, ordered rows of spots (Fig. 1) appeared around the contact surface, which were concentrated especially at the grain boundaries (Fig. 2). After having been treated with a photographic

developer, the spots became black, and were found to be reduced silver which had formed also within the crystals (Fig. 3) at the dislocations. Experiments made at 200° and 280°C, after the AgCl samples had previously been deformed in order to produce slide lines, led to the same result. An especially high Ag concentration was found on the slide lines (Fig. 4), whereas no silver had been separated on the neighboring stress-free places, which apparently contained no defects. The concentration of the Ag spots corresponded to the concentration of the defects. After attaining a maximum, the concentration of the spots no longer increased, but the silver crystals started growing. Similar but less distinct effects were also observed when AgCl was treated with copper. The authors thank Professor A. A. Zhukhovitskiy for his advice. There are 4 figures and 11 references: 2 Soviet, 2 US, and 2 British.

ASSOCIATION: Kafedra fiziki Moskovskogo instituta stali (Chair of Physics of the Moscow Steel Institute)

SUBMITTED: February 16, 1960

S/137/60/000/010/028/040
A006/A001

Translation from: Referativnyy zhurnal, Metallurgiya, 1960, No. 10, p. 247, # 24424

AUTHORS: Suy Zhuy-fan' (Sui Jui-fan), Shaskol'skaya, M.P.

TITLE: Investigation of the Dislocation Mechanism of Slip in Crystals

PERIODICAL: J. Harbin Polytechn. Inst., 1959, No. 4, pp. 31 - 42 (Chinese, Russian summary)

TEXT: The authors studied the dislocation mechanism of slip in crystals of the rock salt type. Birefringence bands, observed in polarized light, were compared with results of investigations into the surface relief of lateral crystal faces, obtained by the microinterometrical method. It was established that during the process of slipping the magnitudes of shift at both ends of the slip plane were always equal. The method of etch-pits was used to investigate the distribution of dislocations in crystals during plastic deformation. By comparing the magnitudes of shift in a plastic deformed rock-salt crystal with

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S/137/60/000/010/028/040
A006/A001

Investigation of the Dislocation Mechanism of Slip in Crystals

the surface relief of lateral faces, a single-valued correlation of the etch-pit and dislocation was established. It is shown that dislocations of opposite signs are impeded in the slip band; at elevated temperature they are able to move toward each other and to be annihilated. There are 19 references.

Z.F.

Translator's note: This is the full translation of the original Russian abstract.

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SHASKOL'SKAYA, M.P.; BLISTANOV, A.A.

Decoration of defects in silver chloride crystals. Fiz. tver. tela 2 no.9:2270-2275 S '60. (MIRA 13:10)

1. Kafedra fiziki Moskovskogo instituta stali.
(Silver chloride crystals--Defects)

VEKILOV, Yu.; TYAPUNINA, N.A.; SHASKOL'SKAYA, M.P.

Internal friction and dislocation density in LiF following a preliminary plastic deformation. Kristallografiia 5 no. 6:953-955 N-D '60. (MIRA 13:12)

1. Moskovskiy institut stali i Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
(Lithium fluoride crystals)

S/137/61/000/003/062/069
A006/A101

AUTHORS: Sun Jui-fan, and Shaskol'skaya, M. P.

TITLE: Investigation of the slip dislocation mechanism in crystals

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 3, 1961, 37-38, abstract 3Zh236 (Wu li hsuebao, Acta phys. sinica, v. 16, no. 4, 1960, 229-240, Chinese, Russian summary)

TEXT: The authors studied the distribution of dislocations during plastic deformation by the method of etching patterns. The comparison of double refraction fringes with the corresponding surface relief, determined by the microinterferometer method, shows a dislocation mechanism of slip in crystals of sodium chloride type. The single-valued correlation between etching patterns and dislocations was shown by comparing differences of shear values in plastic deformed crystals of sodium chloride corresponding to projection of the same fringe onto the side faces of the crystal. It was experimentally proved that dislocations of opposite signs were trapped in the slip zone. At higher temperatures these dislocations are able to move toward each other and be mutually annihilated. There are 19 references.

M. M.

[Abstractor's note: Complete translation.]

Card 1/1

TSINZERLING, Yekaterina Vladimirovna; SHASKOL'SKAYA, M.P., otv. red.; KUZNETSOVA, Ye.B., red. izd-va; MAKUNI, Ye.V., tekhn. red.

[Artificial twinning of quartz] Iskusstvennoe dvoinikovanie kvartsa. Moskva, Izd-vo Akad. nauk SSSR, 1961. 159 p. (MIRA 14:5)

(Quartz)

S/181/61/003/002/047/050
B102/B201

24.7700 1143 1150 1138

AUTHORS: Shaskol'skaya, M. P., Wang Yen-wen, and Ku Shu-Chao

TITLE: Occurrence of dislocations in electric breakdowns through ion crystals

PERIODICAL: Fizika tverdogo tela, v. 3, no. 2, 1961, 658-659

TEXT: It is a well-known fact that dislocations arise with electric breakdowns in crystals. A brief description is given here of some details concerning such dislocations in alkali halide crystals, and some etch figures are shown (not reproducible) and discussed. 0.5-5 mm thick cleft crystal platelets were inserted between two electrodes in ether (a flat electrode and a point electrode), and the strongly inhomogeneous field was intensified until breakdown was brought about. The crystal surface was thereupon etched using a method described in Ref. 2 (Kristallografiya, 2, 4, 546, 1957). The breakdown site proper displayed such a destruction that the surface could not be examined. At some interval therefrom the (100) plane exhibited dislocations, the arrangement of which reminded one of dendrites or Lichtenberg figures. This arrangement differed for different crystals.

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S/181/61/003/002/047/050
B102/B201

Occurrence of dislocations

LiF showed under the effect of the breakdown rows of dislocations in the [100] and [110] directions, in accordance with findings by Gilman and Stauff. KCl displayed rows of dislocations in the [100] direction only. On the same sites, the dislocation density was found to be much higher in KCl than in LiF. In NaCl, rows of etch figures were also found alongside [110]. There were cases in NaCl where no dislocations at all could be observed after the breakdown. The sporadic dislocations found on AgCl after the breakdown showed no regularity in their arrangement. After a brief heating to not excessively high temperatures (e.g., LiF for two hr to 300°C) all etch figures resulting from a breakdown were found to be flattened, widened, and less clearly distinguishable. This is indicative of the fact that dislocations formed on a breakdown chiefly appear in a thin surface layer. Further experiments to be conducted in a homogeneous field for the purpose of obtaining quantitative data are finally announced. There are 2 figures and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Kafedra fiziki Moskovskogo instituta stali (Department of Physics of the Moscow Steel Institute)

SUBMITTED: July 22, 1960

Card 2/2

S/181/61/003/012/012/028
B104/B102

AUTHORS: Tyapunina, N. A., Shaskol'skaya, M. P., Chao-chien and Vekilov, Yu. Kh.

TITLE: Effect of plastic deformation and irradiation on the internal friction of LiF single crystals

PERIODICAL: Fizika tverdogo tela, v. 3, no. 12, 1961, 3637 - 3644

TEXT: Internal friction, dislocation density, and birefringence of LiF single crystals have been studied. The dislocation density was varied by deformation of the crystals under different stresses and the defect concentration was varied by X-ray treatment. The internal friction was determined from the attenuation of 100-kc longitudinal waves. The measurements were made at a relative deformation amplitude of $3 \cdot 10^{-7}$, at a residual atmospheric pressure of 10^{-2} mm Hg, and at room temperature. The dislocation density was calculated from the number of etch patterns on the {100} faces. The etching agent was a 3% $FeCl_3$ solution. The

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Effect of plastic deformation ...

internal friction of all the preliminarily deformed specimens diminished when resting at room temperature. A stable decrement of attenuation was reached after 1 to 2 hrs. Since the dislocation density remains constant during this time, it is assumed that this recovery phenomenon is related to a fixing of the point dislocations formed during deformation. The birefringence due to the loading of the single crystals vanishes after removal of the load if the deformations were elastic. When deformations are plastic a residual birefringence is observed after load removal. From this limit internal friction and dislocation density increase rapidly. Further increase of stress doubles the decrement of attenuation and increases the dislocation density by two orders of magnitude. The stress at which residual birefringence occurs in conjunction with an increase in internal friction and dislocation density depends on the heat treatment of the specimen. For a specially annealed specimen, the stress amounts to $(3.8 - 4.0)\cdot10^2$ g/mm^2 and for a specimen annealed as usual it amounts to $(5.7 - 7.0)\cdot10^2$ g/mm^2. In order to eliminate the effect of dislocations on the foregoing results from that of point defects, the experi-

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SHASKOL'SKAYA, M.P.; VAN YAN-VEN' [Wang Yen-wên]; GU SHU-CHZHAO [Ku Shu-chao]

Arrangement of dislocations near the impression made by the indentor on the edges of crystals of the rock salt type. Kristallografiia 6 no.2:277-279 Mr-Ap '61. (MIRA 14:9)

1. Moskovskiy institut stali im. I.V. Stalina.
(Dislocations in crystals) (Rock salt)

SHASKOL'SKAYA, M.P.; VAN YAN'-VEN' [Wang Yen-wên]; GU SHU-CHZHAO [Ku Shu-chao]

Etch patterns and dislocations on potassium chloride crystals.
Kristallografiia 6 no.2:282 Mr-Ap '61. (MIRA 14:9)

1. Moskovskiy institut stali im. I.V.Stalina.
(Dislocations in crystals) (Potassium chloride crystals)

SHASKOL'SKAYA, M.P.; PASHKOV, I.F.

Growth of a crystalline layer on a plastically bent rock salt single crystal. Kristallografiia 6 no.3:476-479 My-Je '61. (MIRA 14:8)

1. Moskovskiy institut stali imeni I.V. Stalina.
(Salt crystals—Growth)

SHASKOL'SKAYA, M.P.; VAN YAN'-VEN' [Wang Yen-wên]; GU SHU-CHZHAO [Ku Shu-chao]

Generation of dislocations in the spreading and fusion of cracks in ionic crystals. Kristallografiia 6 no.4:605-613 Jl-Ag '61. (MIRA 14:8)

1. Moskovskiy institut stali imeni I.V.Stalina.
(Dislocations in crystals) (Ionic crystals)

KLASSEN-NEKLYUDOVA, M.V.; ORLOV, A.N.; MIUSKOV, V.F.; TYAPUNINA, N.A.; SHASKOL'SKAYA, M.P.

Symposium on dislocations in and mechanical properties of solids, held in Cambridge (England). Kristallografiia 6 no.5:809-812 S-O '61. (MIRA 14:10)

1. Institut kristallografii AN SSSR.
(Dislocations in crystals--Congresses)

L 43577-65 EWT(1)/EWT(m)/T/EWP(t)/EEC(b)-2/EWP(b)/EWA(c) Pi-4 IJP(c)
JD/GG

ACCESSION NR: AT5009587 Z/0000/62/000/000/0255/0258

AUTHOR: Shvidkovskiy, Ye. G.; Shaskol'skaya, M.P.; Tyapunina, N.A.; Predvoditelev, A.A.; Durgaryan, A.A.

TITLE: Relationship between the nonelastic properties of solids and dislocations in crystals

SOURCE: Konference o monokrystalech. 4th, Turnov, 1961. Sbornik referatov. Turnov, VUM, 1962, 255-258

TOPIC TAGS: internal friction, crystal dislocation, plastic deformation, metal crystal structure, copper, tin, zinc, cadmium, bismuth, lithium fluoride crystal, crystal defect, xray bombardment

ABSTRACT: To elucidate the mechanism of internal friction and the role of dislocations therein, the authors carried out experiments in order to determine the dependence of internal friction on preliminary plastic deformation in single-crystal and polycrystalline samples of copper, tin, zinc, cadmium, and bismuth. A quartz resonator was employed in the measurements. All the metals showed a maximum in this dependence at 40 - 240 cps. An evaluation of the experimental data for metals, made from the two standpoints

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L 43577-65
ACCESSION NR: AT5009587

2

of dislocation relaxation and temperature relaxation, shows that both of these concepts do not contradict the experiment. Lithium fluoride crystals were then studied in order to gain further insight into the relative roles of these two mechanisms of relaxation. In this case, the study of internal friction in relation to preliminary deformation showed that in lithium fluoride crystals the internal friction and dislocation density remain constant in the region of elastic deformation. As in metals, the rise in internal friction begins simultaneously with the start of bulk volume plastic deformation. As the preliminary deformation is increased further, the rise in internal friction and dislocation density becomes parallel. Lithium fluoride samples subjected to x-ray bombardment before and after deformation were also studied, and the results are interpreted in terms of point defects. Orig. art. has: 5 figures, 8 formulas and 1 table.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University); Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: 00 ENCL: 00 SUB CODE: SS, MM

NO REF SOV: 000 OTHER: 000

B08
Card 2/2

S/070/62/007/001/010/022
E021/E435

AUTHORS: Shaskol'skaya, M.P., Dovrzhanskiy, G.F.

TITLE: On the relation between the distribution of dislocations around an indentation and the strength of a crystal

PERIODICAL: Kristallografiya, v.7, no.1, 1962, 103-106 + 1 plate

TEXT: Previous work has shown that etch figures around an indentation on the (100) face of alkali-halide crystals with NaCl structure are in the form of a characteristic star, the size of which increases with increasing load. The eight rays of the star correspond to the intersection of the 6 slip planes {110} with the cleavage plane (100). The diagonal rays corresponding to the emergence of edge dislocations are always longer than the other rays corresponding to screw dislocations. A series of photographs are shown of LiF crystals after indentation with the same load and after etching in similar conditions: the crystals contain different additions; the length of the rays of the stars changes with different degrees of alloying. The lengths of the rays, the yield point and microhardness of the crystals were determined.

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The data show that the greater the increase in the yield point as a result of alloying the more pronounced is the shortening of the diagonal rays of the stars. Thus, the change in length of diagonal is not a function of the surface changes but of the volume changes in the crystal. Fig.3 shows the relation between the relative change in yield point (x-axis) and the relative change in length of the diagonal. Curve 1 is for a load of 20 g and curve 2 for 50 g. The beginning of the appearance of elastic or plastic deformation was followed by a photo-elastic method. This showed that the beginning of elastic or plastic deformation changed with alloying content in a similar manner to the yield point and the length of the diagonal. The additions obviously block the dislocations in the slip planes preventing them from moving. The possibility is put forward of using the change in length of the rays of stars as a quick qualitative estimate of the strengthening effect of alloying additions. Further work will be carried out to investigate whether the method can be applied to other types of crystal and, in particular, to metals. There are 3 figures.

SHASKOLSKAYA, M. P.

"Generation of Disclosures under Local Stress and their Interaction with Point Defects"
Paper was submitted at the International Conference on Crystal Lattice Defects at Kyoto, 7-12 Sep '62

Chair of Physics, Steel Inst., Moscow

TYAPUNINA, N.A.; SHASKOL'SKAYA, M.P.; CHZHAO-TXZYAN' [Chao-Chien]; VEKILOV, Yu.KH.

Effect of plastic deformation and of radiation on internal friction in LiF monocrystals. Fiz. tver. tela 3 no.12:3637-3644 D '61. (MIRA 14:12)

1. Moskovskiy institut stali.
(Lithium fluoride crystals—Defects)
(Deformations (Mechanics))
(Radiation)

BLISTANOV, A.A.; PANOV, A.V. [deceased]; SHASKOL'SKAYA, M.P.

Recovery of internal friction following plastic deformation in LiF single crystals. Fiz. tver tela 5 no.9:2726-2728 S '63. (MIRA 16:10)

1. Moskovskiy institut stali i splavov.

ACCESSION NR. AP4022896 S/0148/64/000/003/0081/0086

AUTHOR: Markovskiy, V. Yu.; Polukhin, P. I.; Shaskol'skaya, M. P.

TITLE: Determination of the photoelasticity of a fine-grained annealed silver chloride constant subjected to elastic and plastic deformation

SOURCE: IVUZ. Chernaya metallurgiya, no. 3, 1964, 81-86

TOPIC TAGS: Photoelasticity, AgCl, Mo, bending test, tensile test, residual stress, elastic deformation, plastic deformation, AgCl deformation

ABSTRACT: The authors investigated the photoelastic properties of fine-grained polycrystalline AgCl subjected to plastic and elastic deformation after annealing. Single crystals with a diameter of 31 mm and a height of 120 mm were grown in Mo glass crucibles in a vertical tubular electric furnace with a rated temperature gradient. The grown crystal was cut into 40-45 mm cylinders and reduced to 2 to 3 mm-thick plates that were annealed for recrystallization. With a 95% deformation rate 10-hour holding was found to be optimal. Maximum grain size was 0.05 mm and no residual stresses were detected in the specimens. Bending - tensile tests yielded the relationship between the values of the optical difference in

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ACCESSION NR: AP4022896

the occurrence of δ and the actual stress σ, making it possible to express the law of photoelasticity as follows:

$$\delta = Cd\sigma$$

where C is the optical constant, d - the thickness of the specimen and σ - the actual tensile stress. The value of the optical constant was equal to (60 to 70)X 10^{-7} cm^2/kg after tensile tests and (50 to 56) X 10^{-7} cm^2/kg after pure bending tests. A fibrous structure appeared after the application of loads in excess of σ = 1.5 ./. 1.8 kg/mm^2. The determination of the optical constant for fine-grained pseudoisotropic silver chloride provides the possibility of a qualitative and quantitative analysis of the stressed state of pseudoisotropic crystalline materials under the effect of plastic and elastic deformation.

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Institute of Steel and Alloys)

SUBMITTED: 01Aug63 DATE ACQ: 10Apr64 ENCL: 00

SUB CODE: ML NO REF SOV: 005 OTHER: 001

Card 2/2

S/2564/64/004/000/0039/0044

ACCESSION NR: AT4040552

AUTHOR: Dobrzhanskiy, G.F.; Shaskol'skaya, M.P.

TITLE: Inheritance of the defects of a deformed inoculum by a crystal

SOURCE: AN SSSR. Institut kristallografii. Rost kristallov, n. 4, 1964, 39-44

TOPIC TAGS: crystallography, crystal growth, deformed inoculum, deformed seed crystal, lithium fluoride, soldium chloride, potassium chloride, alkali halide, crystal defect, lattice defect, polygonization

ABSTRACT: The improved Kiropoulos method described previously was used in a study of crystal growth from a melt with deformed seed crystals of LiF, NaCl and KCl. The seed crystals were plastically bent, compressed, stretched or twisted. The monocrystals grown were cleaved, and the side face (010) was examined by selective etching. Lauegrams showed that the onset of crystal growth is preceded by polygonization, i.e., restoration of the original structure of the seed crystal, entailing rearrangement of the dislocations so that as nearly as perfect a seed crystal as possible is formed. Growing crystals thus inherit the boundaries of previously deformed sections of seed crystals. "The authors thank

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ACCESSION NR: AT4040552

B. A. Prokudin and L. G. Tsinzorling for their assistance in the work." Orig. art. has: 5 figures.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, AN SSSR)

SUBMITTED: 00	DATE ACQ: 02Jul64	ENCL: 00
SUB CODE: IC, OP	NO REF SOV: 010	OTHER: 005

Card 2/2

ACCESSION NR: AP4019830 S/0181/64/006/003/0728/0734

AUTHORS: Blistanov, A. A.; Shaskol'skaya, M. P.

TITLE: The effect of dislocation pinning on amplitude dependent internal friction in LiF

SOURCE: Fizika tverdogo tela, v. 6, no. 3, 1964, 728-734

TOPIC TAGS: internal friction, dislocation immobilization, single crystal deformation, plastic deformation, alkali halide

ABSTRACT: This paper represents part of the authors' work of examining the role of vacancies and impurity atoms in pinning dislocations in single crystals of alkali-halide crystals. The mechanism of this pinning is important in the study of plastic deformation. The authors investigated frequency- and amplitude-dependent internal friction of single crystals of LiF doped with Mn^{2+} and Fe^{2+} ions. Measurements were made at a frequency of 140 kilocycles after plastic deformation of the samples. It was found that changes in amplitude-dependent friction are more significant in doped crystals of LiF, whereas the recovery of frequency-dependent internal friction is much less affected by the presence of impurities. The effect of intrinsic point defects and impurity atoms on changes in amplitude-dependent and

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ACCESSION NR: AP4019850

amplitude-independent internal friction is not uniform. Impurities of the bivalent Mn^{2+} and Fe^{2+} ions in LiF substantially increase changes in amplitude in the early stages of amplitude dependence after plastic deformation. Amplitude-independent internal friction is restored rather completely even in undoped single crystals. The mechanism of internal friction diminution after plastic deformation (at low temperatures) is not reflected in any change in shape of the line $\log \varepsilon_{\Delta W} - \left(\frac{1}{\varepsilon}\right)$ as it should be according to the dislocation theory of A. Granato and K. Lücke. Orig. art. has: 4 figures, 1 table, and 6 formulas.

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Institute of Steel and Alloys)

SUBMITTED: 13Aug63 DATE ACQ: 31Mar64 ENCL: 00

SUB CODE: SS NO REF SOV: 001 OTHER: 005

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S/0181/64/006/003/0735/0740

ACCESSION NR: AP4019831

AUTHORS: Blistanov, A. A.; Shaskol'skaya, M. P.

TITLE: The frequency and temperature dependence of attenuation decrement

SOURCE: Fizika tverdogo tela, v. 6, no. 3, 1964, 735-740

TOPIC TAGS: internal friction, attenuation decrement, dislocation immobilization, dislocation motion, crystal deformation, point defect

ABSTRACT: This work represents an attempt to apply the idea of microcreep to refine the frequency dependence in the internal-friction theory of Köehler, Granato, and Lücke. It is suggested that in some cases microcreep, along with previously identified causes, may lead to a linear dependence of the attenuation decrement on frequency (at low frequencies). The authors consider the possible diffusion displacement of pinned dislocations of point defects by means of external stresses. The effect on internal friction of diffusion of dislocation-pinning centers increases with decrease in frequency and may play a fundamental role for frequencies on the order of several cycles. An exponential temperature dependence follows from the diffusion nature of internal friction at low temperatures. The generalized expression for change in internal friction is found to be

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ACCESSION NR: AP4019831

$$\Delta_I = \Omega \Lambda \Delta_0 \gamma_i^2 \left(\frac{\omega d}{\omega_0^4} + \sum_i \gamma_i \frac{A}{A_{i2}} \frac{\pi}{\omega d_{1i}} \right),$$

where γ_i is the parts of loops pinned by a defect of type i and the summation is made for all possible types of pinning, ω is the vibration frequency of a dislocation loop, d is interatomic distance, Ω is the orientation factor, and A is the mass of a single length of a moving dislocation. This expression also satisfies the frequently observed exponential dependence of internal friction on temperature, since at low frequencies

$$\Delta_I \sim \frac{1}{\omega d_1} = \frac{D_0}{\omega RT} e^{-\frac{Q}{RT}},$$

where D is the rate of atomic migration and Q is the activation energy of diffusion. Orig. art. has: 1 figure and 16 formulas.

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Institute of Steel and Alloys)

Card 2/3

ACCESSION NR: AP4043367 S/0181/64/006/008/2441/2444

AUTHORS: Blistanov, A. A.; Malakhov, G. V.; Shaskol'skaya, M. P.

TITLE: Investigation of the recovery of internal friction in crystalline silver chloride

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2441-2444

TOPIC TAGS: internal friction, recovery dynamics, silver chloride, single crystal, activation energy, diffusion mobility, crystal lattice defect, dislocation immobilization

ABSTRACT: The recovery of low-frequency internal friction following plastic deformation in wire samples of AgCl, either pure or alloyed with 0.012 at.% NaCl, was investigated at 0, 25, and 50°C. The frequencies used were 1.5--2.5 cps. The wire samples were obtained from single crystals by pressing and rolling, followed by annealing for 10 hours. A second annealing was used (130C, 1 hour) after the

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ACCESSION NR: AP4043367

sample was clamped in the relaxator. The activation energies of the recovery process as a whole were found to be approximately the same for both pure and alloyed samples (0.23 ± 0.02 eV) (0.1 ± 0.02 and 0.08 ± 0.02 eV, respectively). The average value of the activation energy of the diffusion of point defects was found to be 0.23 ± ± 0.02 eV for both pure and alloyed samples of AgCl. This indicates that the recovery process proceeds in the same manner in both pure and alloyed silver chloride. The fact that the recovery activation energy is on the whole lower than the activation energy for the diffusion of point defects indicates that, although the observed decrease in internal friction following plastic deformation agrees with the theory of Granata, Hikato, and Lucke (Acta Met. v. 7, 470, 1958) the diffusion mechanism is not the only recovery mechanism, and others, with lower activation energy are possible. It is also shown that the dislocation immobilization is due to diffusion of the intruded Ag^+ ions to the dislocations and of the vacancies of these ions to the dislocations. This is corroborated by the fact that the

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ACCESSION NR: AP4043367

value obtained for the activation energy of the diffusion of the point defects which immobilizes the dislocations during the recovery processes (0.23) is intermediate between the activation energies for Ag^+ ions (0.15) and vacancies (0.33 eV) in silver chloride, as published in the literature. Orig. art. has: 3 figures and 4 formulas.

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Institute of Steel and Alloys)

SUBMITTED: 02Mar64 ENCL: 00

SUB CODE: SS NR REF SOV: 002 OTHER: 004

Card 3/3

MARKOVSKIY, V. Yu.; POLUKHIN, P. I.; SHASKOL'SKAYA, M. P.

Investigating elastic-plastic clean bends by the optical polarization method. Izv. vys.ucheb.zav.; chern.met.7 no. 5:85-89 '64. (MIRA 17:5)

1. Moskovskiy institut stali i splavov.

L 31862-65 EWT(d)/EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(b) JD/EM

ACCESSION NR: AP5003369 S/0149/64/000/006/0109/0115 25 24 B

AUTHOR: Markovskiy, V. Yu.; Polukhin, P.I.; Shaskol'skaya, M.P.

TITLE: A method for the simultaneous observation of stresses and strains in crystalline substances in the elastic and plastic regions 18 18

SOURCE: IVUZ. Tsvetnaya metallurgiya, no. 6, 1964, 109-115

TOPIC TAGS: crystal stress, crystal strain, elastic deformation, plastic deformation, silver chloride, stress strain diagram, polarization optics, photoelastic coating 26

ABSTRACT: A new technique is described for the simultaneous and direct study of the actual and residual stresses and strains by a polarization-optical method. The essential feature of the technique consists in observing the stresses in a polycrystalline material (AgCl) and at the same time studying the strains by the method of photoelastic coatings. In the latter method, a reflecting layer of metallic silver is deposited on the polycrystalline AgCl, and an optically sensitive coating is placed on top of that layer. Two patterns of isochromes (one in AgCl and one in the coating) are then observed on two separate screens, the specimens being subjected to loads. The apparatus and method of operation are described in detail. The technique can be successfully applied to the study of single crystals and coarse-grained polycrystalline samples of any crystalline substance

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L 31862-65

ACCESSION NR: AP5003369

(or amorphous material) producing an optical effect when subjected to stresses. Quantitative data were obtained on the distribution of residual stresses and strains in a sample of fine-grained polycrystalline AgCl subjected to pure plastic bending. The data obtained for silver chloride by the method of photoplasticity can be extended to metals when the simulation laws are observed. Orig. art. has: 5 figures and 1 formula.

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow steel and alloys institute)

SUBMITTED: 21Feb64 ENCL: 00 SUB CODE: MM, IE

NO REF SOV: 009 OTHER: 001

Card 2/2

L 2517-66 EWT(l)/EWT(m)/EPF(c)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/JW/GG
ACCESSION NR: AP5014591 UR/0161/65/007/006/1856/1859

AUTHOR: Blistanov, A. A.; Troitskiy, I. V.; Shaskol'skaya, M. P.

TITLE: Concerning the kinetics of fixation of dislocations by point defects in ionic crystals

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1856-1859

TOPIC TAGS: crystal lattice dislocation, crystal dislocation phenomenon, crystal defect, ionic crystal, alkali-hallide, lithium fluoride

ABSTRACT: The authors investigated the influence of the temperature and of prior deformation on the recovery of internal friction at frequencies 130 and 140 kcs in single crystals of LiF, both pure and doped with Pb^{+2}. The samples were plastically deformed by a combination of static bending and high-frequency vibrations, at temperatures 25, 50, and 80C and at various degrees of deformation. The degree of recovery was found to increase with increasing temperature and with increasing prior deformation. The kinetics of fixation of the dislocations by point defects in the plastically deformed alkali-halide single crystal are discussed from the point of view of the dislocation theory of Granato, Hikata and Lucke (Acta Met. v. 6, 470, 1958). "We are grateful to Ye. G. Shvidkovskiy and N.A. Tyapunina

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L 2517-66

ACCESSION NR: AP5014591 15

for preliminary discussion of the results, and also to N. A. Bispen, Z. A. Smirnova, S. F. Sal'nikova, and P. A. Tsirul'nik for supplying the crystals". Orig. art. has: 5 figures and 3 formulas.

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Institute of Steel and Alloys)

SUBMITTED: 24Sep64 ENCL: 00 SUB CODE: SS, IC

NR REF SOV: 004 OTHER: 003

Card 2/2

[illegible], M.F.; [illegible], L.G.; KULABUKHOVA, R.I.

Selective etchant and a polishing solution for potassium bromide crystals. Kristallografiia 10 no.1:321-325 Ja-F '65. (MIRA 18:3)

1. Moskovskiy institut stali i splavov.

L 5082-66 EWT(l)/EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/GG
ACC NR: AP5024558 UR/0070/65/010/005/0742/0743
548.5

AUTHOR: Belyayev, L.M.; Dobrzhanskiy, G.F.; Novozhikhareva, L.V.; Shaskol'skaya, M.P.

TITLE: Dependence of the perfection of structure and properties of crystals on growing methods

SOURCE: Kristallografiya, v. 10, no. 5, 1965, 742-743, and insert facing p. 742

TOPIC TAGS: single crystal growing, potassium chloride, crystal dislocation

ABSTRACT: A preliminary qualitative study of the effect of various growing techniques on the degree of perfection and properties of the KCl crystal was carried out. Seventy single KCl crystals were grown by the following techniques: Kyropoulos, Kyropoulos with constrictions, Czochralski, Stockbarger, zone crystallization, and aqueous solutions. The perfection of the crystals was determined from the dislocation density revealed by etch figures. The microhardness was obtained with a PMT-3 instrument, and the length of the etch-figure star was measured. KCl crystals with the lowest dislocation density were obtained by the Kyropoulos technique, particularly that involving constrictions. In these crystals, the dislocation density and microhardness decrease from the seed to the end of the crystal. The dependence of structural perfection on the growing methods was found to be quite strong; particularly apparent is the influence of the solvent and crucible. The desirable role of constrictions was confirmed.
"The authors thank K. S. Chernyshev for assistance in the experiments." Orig. art. has: 1 figure and 1 table.

Card 1/2

0901 0193

L 5082-66 6

ACC NR: AP5024558

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, AN SSSR); Moskovskiy institut stali i splavov (Moscow Institute of Steel and Alloys)

SUBMITTED: 30Jan65 ENCL: 00 SUB CODE: SS

NO REF SOV: 005 OTHER: 000

Card 2/2

GRANOVSKIY, Mikhail Aleksandrovich, dots.; MLODZEYEVSKIY, Anatoliy Boleslavovich, prof.; TELESHIN, Roman Vladimirovich, prof.; SHASKOL'SKAYA, Marianna Petrovna, dots.; YAKOVLEV, Ivan Alekseyevich, prof.; IVERONOVA, V.I., red.; CHERNOTAREVA, A.V., red.

[Lecture demonstrations in physics] Laktsionnye demonstratsii po fizike. Moskva, Nauka, 1965. 572 p. (MIRA 18:9)

1. Institut stali i splavov Moskva (for Shaskol'skaya).

N L 11895-66 EWT(1)/EWT(m)/EPF(c)=2/T/EWP(t)/EWP(b) IJP(c)
ACC NR: AT6002244 SOURCE CODE: UR/2564/65/006/000/0129/0132

AUTHOR: Belyayev, L. M.; Govorkov, V. G.; Dobrzhanskiy, G. F.; Martyshev, Yu. N.; Shaskol'skaya, M. P.

ORG: none

TITLE: Growing of LiF crystals strengthened by adding uranium, and study of their properties

SOURCE: AN SSSR. Institut kristallografii. Rost kristallov, v. 6, 1965, 129-132

TOPIC TAGS: single crystal growing, lithium fluoride, uranyl nitrate, crystal dislocation, triboluminescence, hardness, solid mechanical property

ABSTRACT: LiF single crystals activated with $UO_2(NO_3)_2$ were grown from the melt by the Kyropoulos method. The infrared absorption spectra of LiF + U crystals obtained were almost identical to those of pure LiF. Three methods were used to study the mechanical properties of the crystals: (1) measurement of microhardness with a PMT-3 instrument; (2) compression tests with an instrument for micromechanical testing of materials; (3) study of the "star" of dislocations formed around the mark of the diamond indenter. It was found that the introduction of uranium increases the strength of LiF crystals by one order of magnitude and the microhardness by 20% without changing their transparency in the infrared. A shortening of the prongs of the "star" showed a decrease in the mobility of dislocations arising during plastic deformation. This decrease is thought to be caused chiefly by the

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ACC NR: AT6002244

formation of a charge on the dislocations by the uranium ions. An analogy was observed between the mechanical and triboluminescent properties of LiF + U crystals. It is concluded that the principal part in the phenomenon of triboluminescence is not played by the cloud of excess charges, but by the mobility of dislocations. Orig. art. has: 5 figures and 1 table.

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 006 / OTH REF: 001

Card 2/2

BLISTANOV, A.A.; GLIASKOL'SKAYA, M.F.

Effect of high-frequency vibrations on internal friction recovery in LiF single crystals. Fiz. tver. tela 7 no.10:2930-2932 O '65. (MIRA 18:11)

1. Moskovskiy institut stali i splavov.

L 26642-66 EWT(l)/EWT(m)/T/EWP(t) IJP(c) JD/JW/JG

ACC NR: AP502[illegible]367 SOURCE CODE: UR/0181/65/007/010/2930/2932

54
B

AUTHOR: Blistanov, A. A.; Shaskol'skaya, M. P.

ORG: Moscow Steel and Alloy Institute (Moskovskiy institut stali i splavov)

TITLE: The effect of high frequency oscillations on the recovery of internal friction in lithium fluoride monocrystals

SOURCE: Fizika tverdogo tela, v. 7, no. 10, 1965, 2930-2932

TOPIC TAGS: lithium fluoride, crystal structure, internal friction, single crystal, HF vibration

ABSTRACT: Since it was indicated that the effect of high-frequency vibrations leads to a growth of internal friction and an increase of dislocation in LiF and NaCl crystals, the effect of high frequency vibrations on deformation reactions of monocrystal specimens of LiF was studied. The purpose of the work was to study the role of impurities in the process of blocking dislocation and the effect of high frequency vibrations on this blocking. Recovery of internal friction was studied in LiF monocrystals in the "pure" form and with Ca^{2+} (0.01%) impurity at frequencies of 130 kilocycles. It was indicated that the parameter of the recovery rate in the Granato, Lucke, Hikata theory

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L 26642-66

ACC NR: AP5025367

decreases with the growth of preliminary deformation. Doping leads to an increase in recovery rate. Results were confirmed from the point of view of dislocation theory of internal friction. Orig. art. has: 3 fig.

SUB CODE: 20/ SUBM DATE: 01Apr65/ ORIG REF: 001/ OTH REF:004

Card 2/2

L 06440-67 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6026719 SOURCE CODE: UR/0181/66/008/008/2494/2496

AUTHOR: Tyapunina, N. A.; Shaskol'skaya, M. P.; Lorner, M. D.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet); Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Change in the photosensitivity of silver chloride crystals under the influence of high-frequency vibration and dependence of internal friction on prior illumination of the crystal

SOURCE: Fizika tverdogo tela, v. 8, no. 8, 1966, 2494-2496

TOPIC TAGS: silver chloride, photosensitivity, hf vibration, internal friction

ABSTRACT: AgCl single crystals in glass ampoules were subjected to longitudinal mechanical vibrations in a resonance oscillator at a frequency of ~100 kc. The amplitude of relative deformation was varied from ~0.5 to ~30 g/mm^2. The maximum stresses during the vibration did not exceed the yield stress of AgCl. It was noted that if the ampoule was not protected from daylight, the colors of the crystals darkened. This increased photosensitivity persisted after the vibration was discontinued. Following the action of light, the internal friction not only decreased in magnitude, but its dependence on the deformation amplitude changed. It is concluded that the photosensitivity of AgCl crystals increases if they are subjected to high-frequency vibration, and that prior illumination of the crystals affects the internal friction.

Card 1/2

ACC NR: AP5027210

Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 15Feb66/ ORIG REF: 002/ OTH REF: 001

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L 23019-66 EWT(l)/EWT(m)/T/EWP(t) IJP(c) JD
ACC NR: AP6009652 SOURCE CODE: UR/0181/66/003/003/0736/0739

AUTHORS: Blistanov, A. A.; Malakhov, G. V.; Soyfer, Ya. M.; Shaskol'skaya, M. P.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Effect of electrical field on the internal friction in NaCl and LiF

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 736-739

TOPIC TAGS: sodium chloride, lithium fluoride, single crystal, internal friction, crystal dislocation, crystal defect, ionic crystal, plastic deformation, electrostatic field

ABSTRACT: To check on the interaction between dislocations and point defects in ionic crystals, the authors measured the internal friction in NaCl and LiF crystals placed in a constant electrostatic field at frequencies ~5 kcs and 1 cps. The measurements at 5 kcs were made by the method of F. Forster (Zs. Metallkunde v. 29, 109, 1937). Dynamic

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L 23019-66
ACC NR: AP6009652 O

microphones were used as transmitters and receivers. The logarithmic decrement was recorded with an amplifier, amplitude discriminator, and scalar. The measurements at 1 cps were made by the method of inverted torsion pendulum. The oscillations were recorded electronically with an inductive pickup. The number of oscillations was counted electromechanically. The sample temperature could be controlled thermostatically in the range from - 150 to + 80C. The electric field intensity could reach 10 kev/cm. All experiments were made at room temperature, since prior measurements of the temperature dependence have shown that there are no internal-friction peaks at room temperature. Comparative measurements were made of the effect of the electrostatic field and of plastic deformation on the internal friction, and the experiments have shown that at both frequencies the electrostatic field and the plastic deformation produce similar effects. The time variation of the internal friction of the single crystals in a fixed electrostatic field exhibited a saturation behavior. The low frequency internal friction was found to be more sensitive to changes in the electrostatic field intensity than the high-frequency friction. The results obtained at low frequencies were more stable

Card 2/3

L 23019-66

ACC NR: AP6009652

and more consistent upon repetition. This indicates that the internal friction mechanisms at the two frequencies are different. Orig. art. has: 4 figures and 5 formulas.

SUB CODE: 20/ SUBM DATE: 17Jul65/ ORIG REF: 007/ OTH REF: 008

Card 3/3

L 09900-67 EWT(m)/EWP(t)/ETI IJP(c) GG/JW/JD

ACC NR: AP6033564 SOURCE CODE: UR/0181/66/008/010/3019/3021 34

AUTHOR: Berzina, I. G.; Gusev, E. B.; Shaskol'skaya, M. P.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov); All-Union Scientific Research Institute of Nuclear Geophysics and Geochemistry, Moscow (Vsesoyuznyy nauchno-issledovatel'skiy institut yadernoy geofiziki i geokhimi)

TITLE: Effect of annealing on the mobility of dislocations in irradiated LiF

SOURCE: Fizika tverdogo tela, v. 8, no. 10, 1966, 3019-3021

TOPIC TAGS: lithium fluoride, annealing, etched crystal, crystal dislocation, crystal lattice dislocation, isothermal annealing, color center, dislocation mobility, etch figure, etch figure star

ABSTRACT: The effect of various color centers on the dislocation mobility and the structure of the etch figure star of the lithium fluoride crystal face (100) is investigated. The restoration of the structure and size of the etch figure star during the process of isothermal annealing was found to be divided into three stages, which correspond to the elimination of different types of defecs, and

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L 09900-67

ACC NR: AP6033564

restoration time was found to depend on the amount of irradiation. [Authors' abstract]

SUB CODE: 20/ SUBM DATE: 13Oct66/ ORIG REF: 003/ OTH REF: 002/

PORTNOY, N.D.; KONDRATOVICH, V.V.; RABKIN, D.M.; ZVONKOV, M.L.; BOVIN, A.I.; GENRIKHSDORF, N.G.; OLESHKOV, Yu.V.; SHASKIN, A.Ya.; KREMERMAN, P.L.; KHODZHAYEV, A.I.; PISAREVSKIY, M.S.

Automatic welding of aluminum alloy products instead of manual arc welding with a carbon electrode. Suggestion by N.D.Portnoi and others. Prom.energ.11 no.4:21-22 Ap '56. (MIRA 9:7)
(Aluminum alloys--Welding)

PAVLOV, Vyacheslav Aleksandrovich, prof.; SHASKOL'SKAYA, N.D., red.; SIDOROVA, V.I., red.izd-va; TITOVA, L.L., tekhn.red.

[Metabolism and biological rotation] Obmen veshchestv i biologicheskii krugovorot. Moskva, Gos.izd-vo "Vysshaia shkola," 1960. 93 p. (MIRA 13:7)

(METABOLISM)

SHASKOL'SKAYA, N.D.

Identification of the mosaic disease of millet. Nauch. dokl. vys. shkoly; biol. nauki no. 1:103-109 '61. (MIRA 14:2)

1. Rekomendovana kafedroy nizshikh rasteniy Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.
(KUYBYSHEV PROVINCE--MILLET--DISEASES AND PESTS)
(MOSAIC DISEASES)
(LEAFHOPPERS AS CARRIERS OF DISEASE)

PAVLYAZKINA, G.M.; PRIDANTSEVA, Ye.A.; SHASKOL'SKAYA, N.D.

Methods of rearing cicadas, carriers of plant disease, under artificial conditions. Nauch.dokl.vys.shkoly; biol.nauki no.4: 28-32 '62. (MIRA 15:10)

1. Rekomendovana Vsesoyuznym nauchno-issledovatel'skim institutom fitopatologii.

(INSECTS AS CARRIERS OF PLANT DISEASES)
(CICADA) (INSECTS AS LABORATORY ANIMALS)

SHASKOL'SKAYA, M.D.

Transmission of the winter mosaic virus through the egg by the cicada Psammotettix striatus L. Zool. zhur. 41 no.5:717-720 My '62. (MIRA 15:6)

1. All-Union Research Institute of Phytopathology, Golitsino Moscow Region.
(Wheat--Diseases and pests) (Cicadas as carriers of disease) (Mosaic diseases)

RAVTAPKLIA, G. M.; SHAKOL'SKAYA, N. D.; BLAGOVATELEVA, G. I.

"Patologicheskoye deystviye virusov gruppy zheltukh na rasteniye i nasekomoye-perenostchika."

paper presented at Symp on Virus Diseases, Moscow, 5-9 Oct 64.

ACC NR: AP6021579 (N) SOURCE CODE: UR/0402/66/000/003/0343/0348

AUTHOR: Kuvshinova, Ye. V.; Atabekov, I. G.; Shaskol'skaya, N. D.; Novikov, V. K.; Popova, G. A.

ORG: Department of Virology, Moscow State University (Kafedra virusologii Moskovskogo universiteta im. M. V. Lomonosova); All-Union Scientific Research Institute for Phytopathology (Vsesoyuznyy nauchno-issledovatel'skiy institut fitopatologii)

TITLE: Comparative serological analysis of rod-shaped viruses

SOURCE: Voprosy virusologii, no. 3, 1966, 343-348

TOPIC TAGS: virology, serology, serological analysis, serotyping, virus, rod shaped virus, immunodiffusion method, mosaic virus, tobacco mosaic virus, PLANT DISEASE, WHEAT

ABSTRACT:
Serological relationships between TMV, cucumber mosaic no. 2, barley stripe mosaic, and winter wheat mosaic viruses were established. Winter wheat mosaic virus is unique among them in that it is a "yellow" virus rather than a true "mosaic" type biological. Orig. art. has: 2 figures. [W.A. 50; CBE No. 10]

SUB CODE: 06/ SUBM DATE: 25Apr65/ ORIG REF: 006/ OTH REF: 016/

Card 1/1 UDC: 576.858.077.3

ZAGORSKAYA, Ye.D., kand.med.nauk, SHASKOL'SKAYA, N.G., (Moskva)

A frequent error in statistical analysis in clinical work. Klin. med. 36 no.5:134-137 My '58 (MIRA 11:7)

1. Iz Instituta organizatsii zdravookhraneniya i istorii meditsiny imeni N.A. Semashko Ministerstva zdravookhraneniya SSSR (dir. Ye.D. Ashurkov).
(VITAL STATISTICS,
morbidity, common errors in analysis of clin. cond. (Rus))

OVCHAROV, V.K., kand.med.nauk; SHASKOL'SKAYA, N.G., kand.med.nauk; MERKOV, A.M., prof.; DEYCHMAN, E.I., kand.med.nauk; REYNBERG, G.A., prof.

[Manual on the use of the Soviet and international nomenclatures of diseases and the causes of death; alphabetical index of the names of diseases and their numbers] Posobie k pol'zovaniiu sovetskoi i mezhdunarodnoi nomenklaturami boleznei i prichin smerti; alfavitnyi ukazatel' naimenovanii boleznei i ikh shifrov. Moskva, M-vo zdravookhraneniia SSSR, 1959. 445 p. (MIRA 13:9)

1. Moscow. Institut organizatsii zdravookhraneniya i istorii meditsiny imeni N.A.Semashko.
(MEDICINE--TERMINOLOGY)

SHASKOL'SKAYA, N.P.

"A.M. Filomafitskiy-First Russian Physoilogist-Experimenter." Thesis for degree of Cand. Biological Sci. Sub 26, Apr 50, Moscow Order of Lenin State U imeni M.V. Lomonosov

Summary 71, 4 Sep 52, Dissertations Presented for Dgrees in Science and Engineering in Moscow in 1950. From Vechernyaya Moskva, Jan-Dec 1950.

SHASKOL'SKIY, B. V.

USSR/Mechanics Aug 1947
Cams
Machinery - Design

"Calculating the Angular Limits of the Rise of the Cam in Automatic Machinery," B. V. Shaskol'skiy, Candidate in Technical Sciences, 4½ pp

"Stanki i Instrument" No 8

Enlarges on the method suggested by V. V. Dobrovol'skiy for calculations on cylindrical cams. Discusses the sturdiness of the cam and methods for calculating this factor, methods for calculating the angle of rise and drop of cams for sliding cam machinery, as well as for cam lever machinery, the effect of the accuracy

USSR/Mechanics (Cont'd) Aug 1947

of the manufactured cam on the rise angles, and the calculated radius of the cam curvature.

34T40

SAVOS'KIN, N.M., inzhener; SHASKOL'SKIY, B.V., kandidat tekhnicheskikh nauk; TIKHONOV, A.Ya., tekhnicheskiy redaktor

[Manual on specification sheets for metal cutting tools; abridged specification sheets for technicians and norm setters] Rukovodstvo po pasportizatsii metallorezhushchikh stankov; sokrashchennye pasporta dlia tekhnologov i normirovshchikov. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 367 p. (MLRA 9:12)

1. Russia (1923- U.S.S.R.) Ministerstvo stankostroitel'noy i instrumental'noy promyshlennosti. Nauchno-issledovatel'skoye byuro tekhnicheskikh normativov.
(Cutting tools)

SHASKOL'SKIY, B.V.

Revising the form of certificates for metal-cutting machines. Stan.i instr. 27 no.11:23 N'56. (MLRA 10:1)
(Machine tools) (Machinery--Tables, calculations, etc.)

25(5) PHASE I BOOK EXPLOITATION SOV/1274

Baranov, Boris Aleksandrovich; Zolotov, Vsevolod Nikolayevich (Deceased); Khisin, Rafail Iosifovich; Shapiro, Isay Iosifovich; Shaskol'skiy, Boris Vladimirovich; Shakhnazarov, Musheg Mosesovich

Tekhnicheskoye normirovaniye na mashinostroitel'nom zavode (Technical Standards for Machine-building Plants) Moscow, Oborongiz, 1958. 576 p. 7,000 copies printed.

Reviewer: Kremenetskiy, N.L., Engineer; Ed. (Title page): Shakhnazarova, M.M.; Ed. (Inside book): Tishin, S.D., Candidate of Technical Sciences, Docent; Ed. of Publishing House: Rodzevich, S.S.; Tech. Ed.: Rozhin, V.P.; Managing Ed.: Sokolov, A.I., Engineer.

PURPOSE: This book is a theoretical and practical manual for engineers and technicians engaged in setting technical standards in aircraft manufacturing establishments and working in scientific research and planning institutes.

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SHASKOLSKIY, O.V.
P. 2-4

PHASE I BOOK EXPLOITATION SOV. 3384

Moscow, Aviatsionnyy tekhnologicheskiy institut

Voprosy avtomatizatsii i mekhanizatsii tekhnologicheskikh protsessov (Problems in the Automation and Mechanization of Manufacturing Processes) Moscow, Oborongiz, 1959. 103 p. (Series: Its: Trudy, vyp. 39) Errata slip inserted. 6,300 copies printed.

Sponsoring Agency: Ministerstvo vysshego obrazovaniya SSSR.

Ed.: A. I. Isayev, Doctor of Technical Sciences, Professor; Ed. of Publishing House: I. A. Suvorova; Tech. Ed.: N. A. Pukhlikova; Managing Ed.: A. S. Zaymovskaya.

PURPOSE: This collection of articles is intended for engineer-technologists and scientific workers in the field of technology of machine construction, and students in the same special field.

COVERAGE: This collection of articles considers, on the basis of investigations conducted, methods for the automation of manufacturing processes involving the machining of parts on metal-cutting machine tools; it presents information

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regarding a suitable selection of machine tools for lot production and deals with methods of mechanizing the machining and inspection of parts having a complex form.

The report of B. V. Shaskol'skiy and Yu.G. Savkin presents the results of investigations of automation of the primary adjustment in lathe work. The authors consider an extremely timely problem, the positive solution of which, under actual manufacturing conditions, may have far-reaching technical and economic effects.

In the report of B. V. Shaskol'skiy and A. A. Nikolayev, the authors consider a problem which up to now has been only slightly dealt with -- the problem of selecting suitable types of lathes for lot production. The material presented in this report is of interest to designers working in the field of machine-tool construction and to industrial engineers.

A. I. Isayev and L. M. Pomerantsev present in their report the results of investigations in the field of the mechanization of machining and inspection of the blade surfaces of propeller-type hydroturbines. Based on an investigation of the machining process of model blades, the report presents a draft

design of the equipment and machinery necessary for machining and checking the dimensions of full-scale hydroturbine blades. The results of these investigations may be of use to industrial engineers and engineers who work in the field of hydroturbine construction.

The report of I. V. Dunin-Barkovskiy and A. N. Kartasheva considers the problem of criteria for reliable checking of measuring instruments, a problem which, in connection with the development of the manufacture of different kinds of devices for automatized technological processes, presents definite practical and scientific interest.

The report of A. A. Chistakov on a method for determining the permissible unbalance in the rotors of high-speed turboengines will be useful for designers and engineers in motor and turbine plants.

The collection was prepared for printing by Docent S. I. Gurevich, Candidate of Technical Sciences. References are given at the end of each article.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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4-4-60

25616

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26.2122

S/536/60/000/045/005/006
E194/E184

AUTHOR: Shaskol'skiy, B.V., Candidate of Technical Sciences

TITLE: Problems of the kinematics of vibro-contact polishing of blades with very deep profile

PERIODICAL: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy. No.45. Moscow, 1960. Issledovaniye protsessov obrabotki metallov rezaniyem. pp. 139-149

TEXT: Vibratory polishing is an advanced method of surface finishing gas turbine blades. The principle of the process will be seen from Fig.1. The blade 1 is held between two rubber pads 2 and 3 which are fastened in metal holders 4 and 5. The blade is made to vibrate at a rate of 900 - 1500 strokes/min with a straight line translatory motion in the two directions shown by the arrows A and B. The blade is then polished by two abrasive belts 6 and 7 which adhere to the rubber pads and slide over the blades. To ensure good contact between blade and pads the blade must be able to position itself transversely (arrow K) and about the vertical and horizontal axes (arrows D and M). The suspension originally used to achieve this motion is described and was

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Problems of the kinematics of vibro-...

successful in treating many types of blade. However, in trying to polish turbine blades with small radii of curvature combined with large angles of twist and great depth of profile it was found that a considerable part of the profile remained unpolished. It was found that this occurred because when the angle of pressure between the direction of motion of the blade and the direction of the tangent to the profile is very high the frictional forces increase and the rubber pads are deformed. To reduce the angles of pressure it is necessary to alter the straight line motion in the direction of the arrows B in Fig.1 by oscillatory motion around a certain axis so selected that the pressure angle is not too great at any section of the blade. The method of finding the optimum position of the axis of rotation is then discussed first for simple cases and later for a blade with profile of variable curvature. Geometrical constructions for determining the best axis of rotation are given. With the new type of motion of the blade during polishing the facilities previously provided for the blade to position itself are not only unnecessary but positively harmful. Accordingly a new design of the suspension was prepared, which is illustrated in Fig.9 in which vertical motion of the blade is

achieved not by a shaft sliding through bearings but by bending of steel tapes forming an elastic parallelogram. In designing the suspension free vertical motion must be combined with sufficient torsional rigidity. As it was difficult to design the spring parallelogram theoretically, tests were made on special models. In the final suspension the vertical displacement is provided by a crank mechanism 2 which drives a frame 5 suspended on two flat spring I. Horizontal positioning of the blades is permitted by two springs L. A further crank 6 provides the rotatory motion. The springs I are made of steel 160 mm wide, or two strips 80 mm wide, 100 mm long and 1 mm thick. The springs L are 100 mm wide, 28 mm long and 0.6 mm thick. With this suspension the blade surfaces are satisfactorily polished.
There are 9 figures.

SHAŠKOL'SKIY, B.V., kand.tekhn.nauk; YEVGENEV, G.B., inzh.; LAPSHIN, N.P., inzh.

Polishing blade backs on the KhSh-185 machine. Trudy MATI no.45: 150 '60. (MIRA 14:1)
(Blades) (Grinding and polishing)

S/536/60/000/045/006/006
E073/E335

1 1100

AUTHORS: Shaskol'skiy, B.V., Candidate of Technical Sciences, Yevgenev, G.B., Engineer and Lapshin, N.P., Engineer

TITLE: Grinding of the Backs of Gas-turbine Blades on the Gauge ХШ-185 (KhSh-185) Grinding Machine

PERIODICAL: Moscow. Aviatsionnyy tekhnicheskiy institut. Trudy. No. 45. Moscow, 1960. Issledovaniye protsessov obrabotki metallov rezhaniyem, pp.150-169

TEXT: A detailed description is given of the method of surface-finishing of gas-turbine blade air-foils by grinding on an ShKh-185 grinding machine. The operation of this machine is as follows (Fig. 1): Blade 1 is clamped in fixture 2 which is set on the table 3 . The table reciprocates left and right together with slider 4 and at the same time rocks about axis 5 . To make the rocking motion of the table 3 proportional to the displacement of the slider, gear 6 which rolls along rack 7 is joined to the table. The air-foil is ground by the absrasive belt 8 which is directed by rollers and is pressed against the blade by the cam 9 , which is fastened in

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Grinding of the Backs ....

ram 10 . Since the air-foil cross-section varies along its length the cam surface has double curvature. The infeed is accomplished by continuous or intermittent lowering of cam 9 . A method is presented in great detail for determining fixture parameters at which a particular air-foil will be successfully ground. On the basis of the method described in the paper, Engineers K.A. Fiveyskiy and N.M. Tarasova worked out practical instructions for using it under shop conditions. Several types of turbine blades, including cast turbine blades with a considerable twist, are now successfully ground on this machine. Practical experience has shown that after calculating one or two blades, the designer will spend no more than 3-4 hours on determining the parameters of the jigs and over half this time is spent on constructing the cross-sections of the blade. If cross-section plots are already available it is possible to reply in one hour to the question as to whether a given blade can be ground with a given dimension of the rack gear, and what would be the position of the axis of the blade relative to the axis of the rack gear (6 , Fig. 1). If the blade cannot

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be ground with the gear of the given dimensions, it is possible to determine additionally in one to two hours the minimum diameter of the rack gear and the minimum length of stroke by means of which the blade can be ground. The authors refer to earlier work on the subject, published in the book of V. A. Shal'nov entitled "Grinding and Polishing of Gas-turbine Blades", Oborongiz, 1959, pp.182-190. There are 23 figures and 1 Soviet reference.

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S/145/61/000/012/005/007
D221/D302

AUTHOR: Shaskol'skiy, Candidate of Technical Sciences, Docent

TITLE: Problems of mechanization and automation of the polishing of gas turbine blades

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 12, 1961, 105-112

TEXT: Vibratory contact polishing as used in the Soviet plants is described. The vertical oscillations are transmitted to a crank, and a ball joint permits horizontal displacements. The abrasive belt does not move during the operation. Compound locating (nesting) devices were made for blades with sharp curves, but even these could not ensure a uniform distribution of pressure during the machining. During 1958-1960, the Moskovskiy aviatsionnyy tekhnologicheskiy institut (Moscow Aviation Technological Institute) analyzed methods of polishing blades with deep profiles, and polishing of several blade types, done formerly by hand, was mechanized. It is appropriate to begin the analysis with the simplest case of

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a plane parallel plate and then to consider successively the variations due to the construction of the holder, the profile curvature, variable thickness of the blade etc. The author discusses these factors in detail; a rational scheme of basic movements of the machine and methods of reducing the wear of locating devices are also considered. The length of the worn parts is proportional to the height of the guide and is related to the coefficient of friction between the belt and the blade. The curvilinear profile results in a greater height of the guide which shifts under the action of friction force, also owing to projection of the normal pressure in the direction of shear. In self-aligning devices, the curvilinear profile results in the kinematic indetermination. Variable thickness of foil requires a greater height of the guide. In the case of a variable radius of curvature, the length of stroke is limited. The arrangement of motion must be chosen so that the pressure angle ψ is minimum for all points of the profile which is achieved by oscillatory motion around the axis. The new suspension is described. It has improved the quality and output of polishing. Further investigations should be directed towards reduction in belt slip. The

use of flexible protecting covers made of strong textiles and placed between the belt and guide decrease wear. Hollow guides with compressed air pressure against the surface of the blade are also mentioned. There are 8 figures and 2 Soviet-bloc references.

ASSOCIATION: Moskovskiy aviatsionnyy tekhnologicheskiy institut (Moscow Aviation Technology Institute)

S/536/62/000/053/002/002
1048/1248

AUTHORS: Shaskol'skiy, B. V., Candidate of technical sciences, Docent

TITLE: Problems of the kinetostatics of polishing of blades with a deep profile

PERIODICAL Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 53. 1962. Issledovaniya v oblasti mekhnicheskoy obrabotki metallov, 23-46

TEXT: The "Sprayers Equipment (USA)" machine for the polishing of turbine blades, and a similar machine built at the Kharkov Aviation Institute, are described in detail and their operation is discussed with special emphasis on the performance of the rubber pads supplying the contact pressure between the blade surface and the abrasive bands. The optimum crank revolution ratio was found to be 2 : 3 to 5 : 6, and not 1 : 15 as used in the "Spayers Equipment" machine. The polishing operation included three stages of 20 sec. each, at a specific pressure of 4.5-9.0 kg/sq.cm. The main factor limiting the speed of operation as the heating of the rubber pads; it was found that the optimum speed of operation as high as that actually used. A mathematical analysis indicated that both the pad wear and the free run of the machine can be reduced by reducing the thickness of the pads and increasing the coefficient of friction between the pad and the abrasive band. The wear of the pad can also be reduced by using convex pads together with convex pad holders. The

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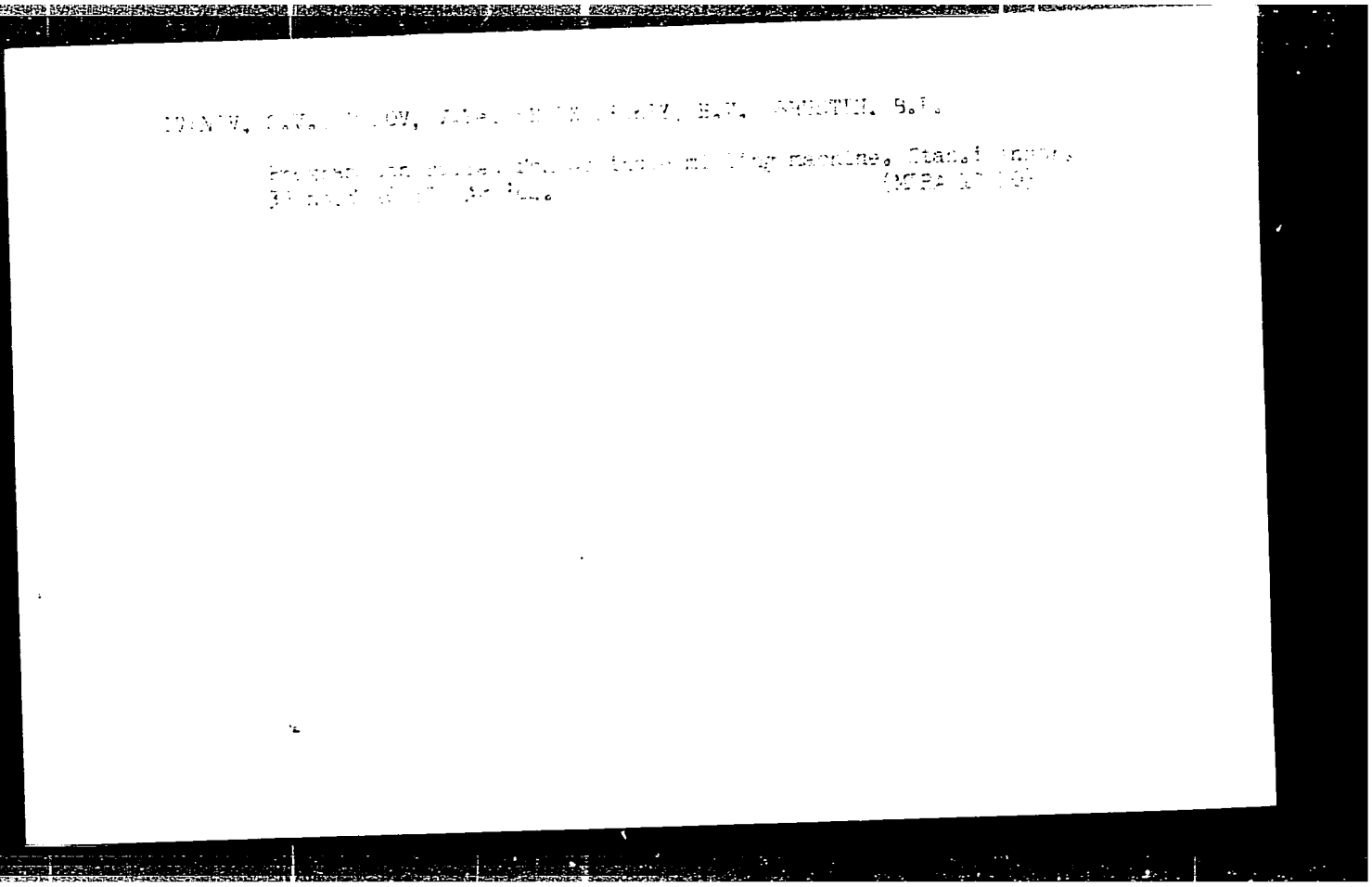
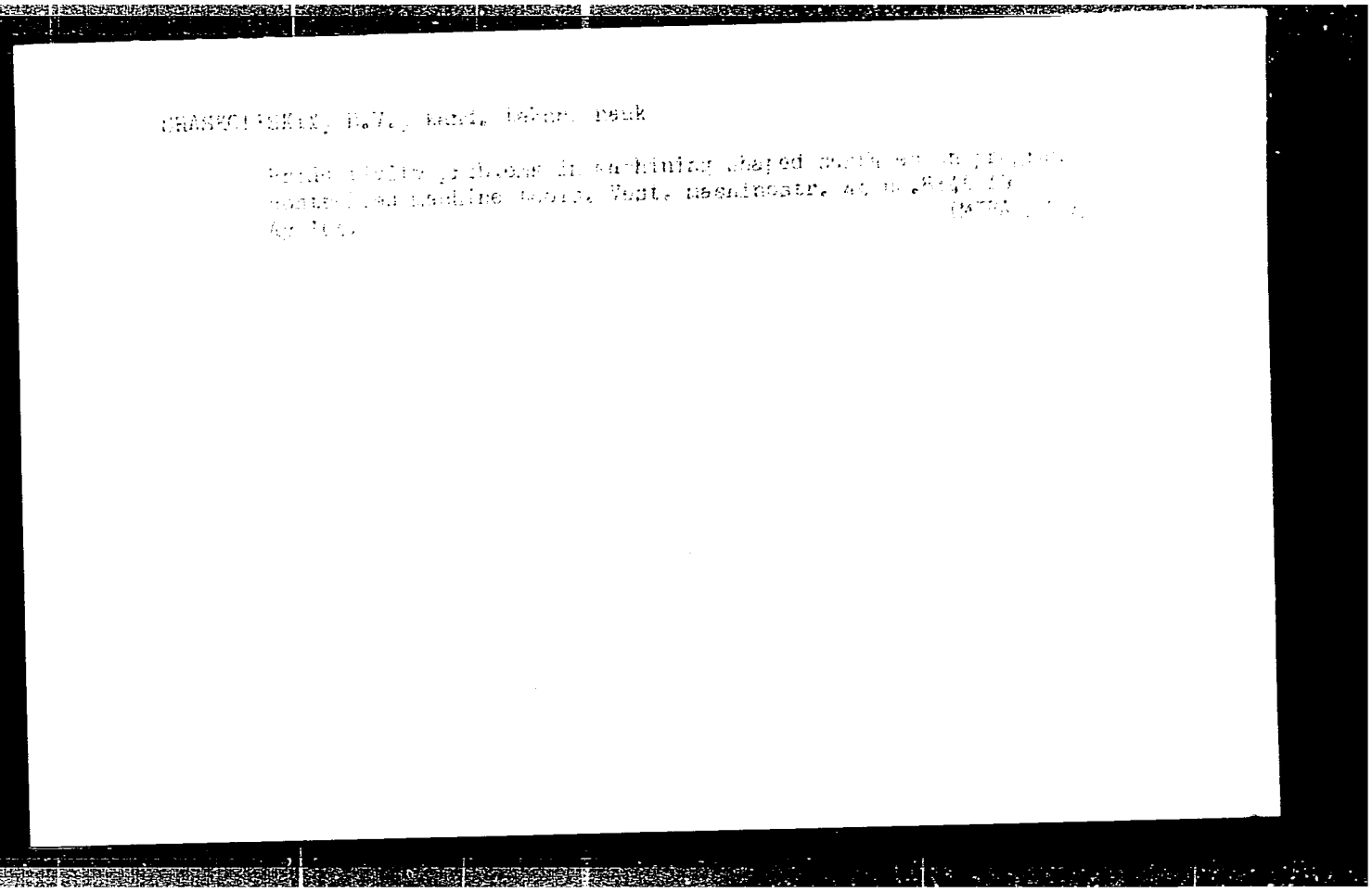
SHASKOL'SKIY, B.V., kand. tekhn. nauk; SOTNIKOVA, K.F., inzh.; GAVRILIN, Ye.F.; LUBKOV, A.N.; SAPOZHNIKOV, V.M.; ZHUCHENKO, L.F.; CHIGIRINA, N.I., tekhnik; ZHARIKOV, I.P., inzh.; CHERTISHCHEVA, A.Ye.; SHAPOVALOV, V.K., tekhnik; MOROZOV, A.M., inzh.; SLIVKO, S.V., tekhnik; CHERNAVSKIY, G.N., kand. tekhn. nauk; STRUZHESTRAKH, Ye.I., inzh., ed.; EL'KIND, V.D., tekhn. red.; DEMKINA, N.F., tekhn. red.

[General norms for time and machining conditions used in the industry for machining on automatic lathes; mass, large-lot and lot production]Obshchemashinostroitel'nye normativy vremeni i rezhimov rezaniia na tokarno-avtomatnye raboty; massovoe, krupnoseriinoe i seriinoe proizvodstvo. Moskva, Mashgiz, 1962. 271 p. (MIRA 15:12)

1. Moscow. TSentral'noye byuro promyshlennykh normativov po trudu. (Turning--Production standards)





SHASKOL'SKIY, D.V.

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1. Vserossiyskiy nauchno-issledovatel'skiy institut prudovogo rybnogo khozyaystva (VNIPRKh).
(Fish culture)

SHASKOL'SKIY, I. P.

Novgorod - Antiquities

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9. Monthly List of Russian Accessions, Library of Congress, October 1952 ~~1953~~, Uncl.

SHaSKOL'SKIY, I., kandidat istoricheskikh nauk.

The Lodeynoye Pole Shipyard. Mor.i rech. flot 13 no.2:29-30 Je '53.
(MLRA 6:8)
(Shipyards)

SHASKOL'SKIY, I.P.

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(Baltic Sea region--Trade routes)

SHASKOL'SKIY, I.P.

Valuable contribution to our historical cartography (Outline history of the U.S.S.R." part 1. Reviewed by I.P.Shaskol'skii). Izv.Vses. geog.ob-va 87 no.1:77-81 Ja-F '55. (MLRA 8:4)
(Russia—Historical geography)

AUTHORS: Shaskol'skiy, I. P., Candidate of Historical Sciences, Baklanova, I. A., Candidate of Historical Sciences. 30-8-35/37

TITLE: A History of Leningrad (Ocherki po istorii Leningrada).

PERIODICAL: Vestnik Akademii Nauk SSSR, 1957, Vol. 27, Nr 8, pp. 118-120 (USSR)

ABSTRACT: On the occasion of the 250th anniversary of the founding of the city of Leningrad the AN Press published a work in three volumes. It was written jointly by several of the learned institutions of Leningrad.The work deals with the history of two-and-a half centuries. Critics of the book emphasize the fact that this is the first time that, on the basis of Marxist-Leninistic historical research work, the founding of the city of Leningrad, its growth, and its development to a center of the militant class-conscious proletariat has been described. Special chapters deal with the part played by St. Petersburg in the history of Russian literature, music, and science. Special interest is caused by the description of the rebuilding of the city after the war. The three volumes of this work have many illustrations and they contain numerous re-

Card 1/2 productions of old city plans, drawings, graphs, etc. The 4th

A History of Leningrad 30-8-35/37

volume, which will be published withing short, is devoted entirely to the work of reconstruction and the rapid development of the city, as, in view of the vast material, 3 volumes were not found to be sufficient.

AVAILABLE: Library of Congress

Card 2/2

Shaskol'skiy, I. P.

ZOLOTNITSKAYA, R.L.; SHASKOL'SKIY, I.P.

Discussion on the first volume of "Outline history of Leningrad". Izv. Vses. Geog. ob-va 89 no.2:175-176 Mr-Ap '57. (MLRA 10:6)
(Leningrad--History)